Chapter 2

Hardware Installation

This chapter gives you a step-by-step procedure on how to install your system. Follow each section accordingly.

2.1 ESD Precautions

Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.

1. Do not remove a component from its protective packaging until you are ready to install it.

2. Wear a wrist ground strap and attach it to a metal part of the system unit before handling a component. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.

2.2 Jumper and Connector Locations

The following figure shows the locations of the jumpers and connectors on the system board:
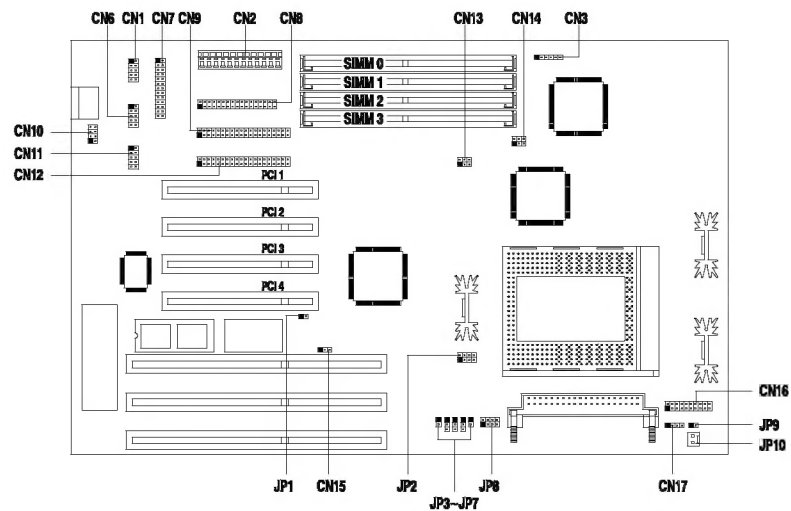
CN1: COM1 connector
CN2: Power connector
CN3: IR connector
CN6: COM2 connector
CN7: Parallel port connector
CN8: Floppy disk drive connector
     jumper
CN9: IDE1 connector
     jumper
CN10: PS/2 mouse connector
CN11: USB connector (optional)
CN12: IDE2 connector
CN13: CPU frequency select jumper
CN14: CPU frequency select jumper
CN15: Keyboard clock jumper

CN16: Multifunction connector
CN17: HDD LED connector
JP1: CMOS setting jumper
JP2: CPU frequency select jumper
JP3: PS/2 mouse select jumper
JP4: I/O DMA channel select

JP5: I/O DMA channel select

JP6: I/O controller jumper
JP7: CPU type select jumper
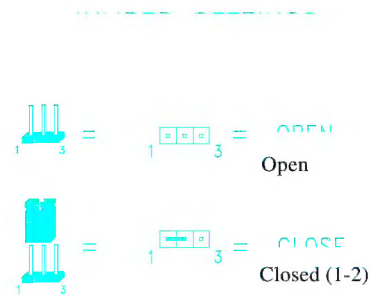JP8: CPU voltage select jumper
JP9: Reserved jumper
JP10: Two-pin fan connector

2.3   Setting the Jumper

Set a jumper switch as follows:

- To open a jumper, remove the jumper cap.

- To close a jumper, insert the plastic jumper cap over two pins of a jumper.

The conventions in the figure are used to represent the proper jumper settings.

Open

Closed (1-2)

2.4 Installing a Microprocessor

The motherboard comes with a zero-insertion force microprocessor socket that allows you to install a CPU without using any tool.
Follow these steps to install a CPU into a ZIF-type CPU socket:

Make sure that the system power is OFF before installing a component.

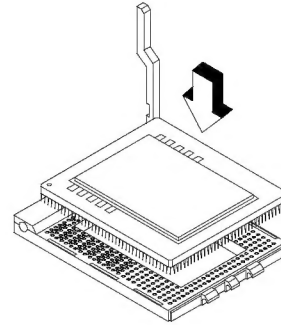1. Locate the CPU socket on the system board and pull up the socket lever.
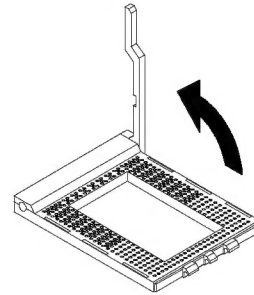
2. Align pin 1 of the CPU with hole 1 of the socket. The dot on the CPU indicates pin 1. The topmost label indicates the CPU frequency and the cache size.
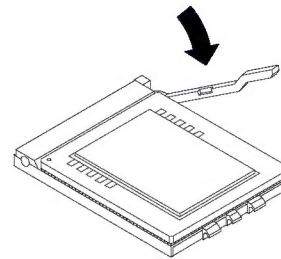
Hole 1   CPU frequency

intel®
PENTIUM®PRO

Cache size supported

Pin 1 indicator
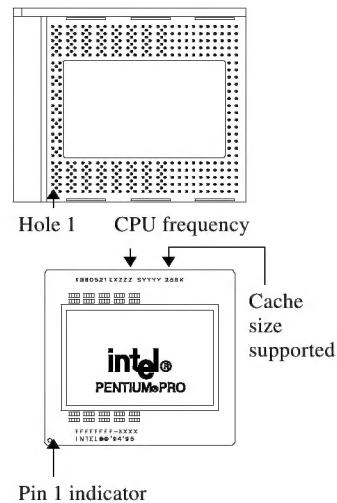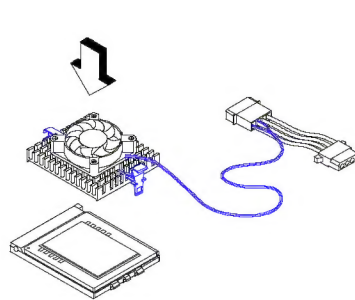
3. Gently insert the CPU into the
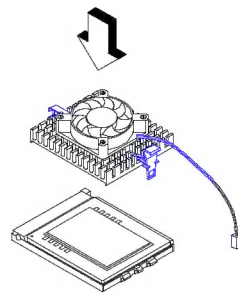   socket.

4. Pull down the socket lever to lock
    the CPU into the socket.
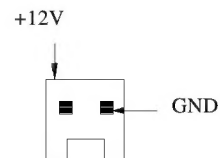
5. Attach the heatsink and fan to the CPU.

With four-pin fan connector   **With two-pin fan connector**

6. Plug the fan cable onto the two-pin fan connector onboard. The fan connector is marked **JP10** on the system board. If your fan cable has four pins, plug it onto the power connector.

+12V

GND

7. Set jumper **JP7** according to the CPU type currently installed on your board.

CPU TYPE SELECT

JP7

Standard CPU
OverDrive CPU

1   2

1   2

8. Set jumpers **JP2**, **CN13** and **CN14** according to the frequency supported by the CPU currently installed on your board.

CPU VOLTAGE

JP2   CN13   CN14

150 MHz
166 MHz
180 MHz

200 MHz

9.   Set jumper **JP8** according to the voltage supported by the CPU currently installed on your board.

Voltage	JP8	Voltage	JP8
3.5V		2.8V	
3.4V		2.7V	
3.3V		2.6V	
3.2V		2.5V	
3.1V		2.4V	
3.0V		2.3V	
2.9V		2.2V	
		2.1V	

By default, JP8 is set to OPEN to enable the CPU voltage auto-detect function.

2.5 Upgrading the Microprocessor

To upgrade a CPU:

1. Turn off the system power and remove the housing cover.

2. Locate the CPU socket on the system board.

3. Pull up the socket lever.

4. Remove the installed CPU, if any.

5. Install the upgrade CPU. Refer to section 2.4 for instructions on how to install a CPU.

2.6   Voltage Regulator Module

You must install the CPU first before installing the VRM. See the section 2.4 on how to install a CPU.

The system board comes with a separate voltage regulator module that enables the system to support the processor′s operating voltage ranging from 2.1V to 3.5V. The following sections tell how to install and remove VRM.
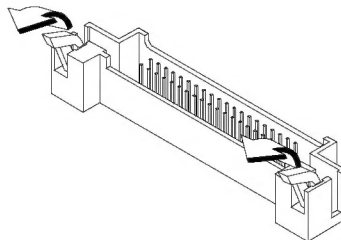
2.6.1 Installing VRM

Observe the ESD precautions when installing components.

Follow these steps to install a VRM:

1.   Locate the VRM connector on the system board. See the board layout figure in Chapter 1.

2.   Push the holding clips of the connector outward.

3. Align the VRM socket to the connector pins. The holding clips must be facing on the rear side of the VRM.

4. Press the VRM downward until the holding clips click into place.
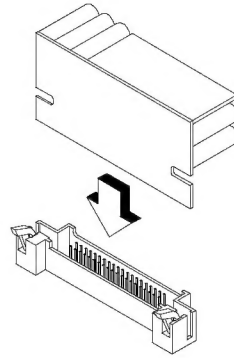
2.6.2 Removing a VRM

1. Push the holding clips outward to release the VRM.

2. Gently pull the VRMto remove it from the connector..

2.7 Configuring the System Memory

The system memory is expandable to 512 MB by adding single in-line memory modules (SIMMs). The four 72-pin SIMM sockets accomm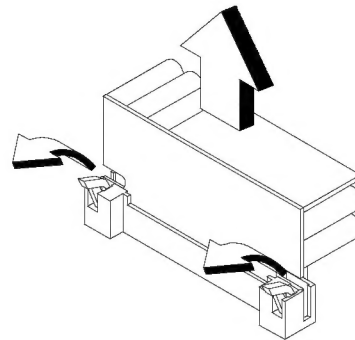odate 4-, 16- and 64-MB single-density SIMMs, and 8- and 32-MB double-density SIMMs. These SIMM sockets also accept both Fast Page type and Extended Data Output (EDO) type DRAMs. The EDO feature extends the data transfer cycle, thus improves memory performance. All SIMMs support a DRAM speed of 60/70 ns or less.
The following are the possible SIMM configurations. Notice that you must install the same SIMMs in one bank.

Memory Configurations

Bank 0		Bank 1		Total
SIMM 0	SIMM 1	SIMM 2	SIMM 3	Memory
4 MB	4 MB			8 MB
4 MB	4 MB	4 MB	4 MB	16 MB
8 MB	8 MB			16 MB
8 MB	8 MB	4 MB	4 MB	24 MB
8 MB	8 MB	8 MB	8 MB	32 MB
16 MB	16 MB			32 MB
4 MB	4 MB	16 MB	16 MB	40 MB
8 MB	8 MB	16 MB	16 MB	48 MB
16 MB	16 MB	16 MB	16 MB	64 MB
32 MB	32 MB			64 MB
4 MB	4 MB	32 MB	32 MB	72 MB
8 MB	8 MB	32 MB	32 MB	80 MB
16 MB	16 MB	32 MB	32 MB	96 MB
32 MB	32 MB	32 MB	32 MB	128 MB
64 MB	64 MB			128 MB

Memory Configurations (continued)

| Bank 0		Bank 1		Total
SIMM 0	SIMM 1	SIMM 2	SIMM 3	Memory
4 MB	4 MB	64 MB	64 MB	136 MB
8 MB	8 MB	64 MB	64 MB	144 MB
16 MB	16 MB	64 MB	64 MB	160 MB
64 MB	64 MB	64 MB	64 MB	256 MB
128 MB	128 MB			256 MB
		128 MB	128 MB	264 MB
4 MB	4 MB	128 MB	128 MB	272 MB
8 MB	8 MB	128 MB	128 MB	288 MB
16 MB	16 MB	128 MB	128 MB	320 MB
64 MB	64 MB	128 MB	128 MB	384 MB
128 MB	128 MB	128 MB	128 MB	512 MB

2.7.1 Installing a SIMM

Observe the ESD precautions when installing components.

Follow these steps to install a SIMM:

1. Slip a SIMM at a $45°$ angle into a socket. If the SIMM does not completely fit into the socket, reverse the SIMM orientation. The SIMM has a curved edge indicating pin 1 that ensures installation in one direction only.
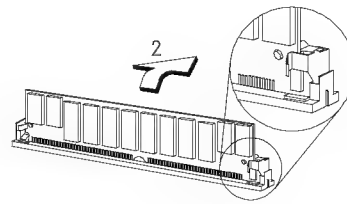

curved edge
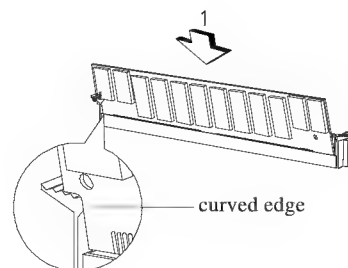
> *Be careful when inserting or removing SIMMs. Forcing a SIMM in or out of a socket can damage the socket or the SIMM (or both).*

2. Gently push the SIMM up until the pegs of the socket slip into the holes on the SIMM and the holding clips lock the SIMM into a vertical position.
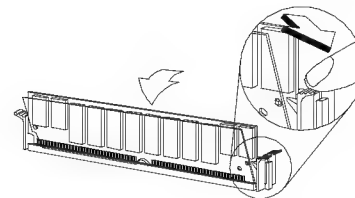

> *The SIMM should be at a 90 angle when installed.*

2.7.2 Removing a SIMM

To remove a SIMM:

1. Press the holding clips on both sides of the SIMM outward to release it.

2. Press the SIMM downward to about a 45° angle.

3. Gently pull the SIMM out of the socket.

2.8   Customizing your Hardware Setup

You may customize your hardware setup according to your desired system performance. However, doing so requires resetting of several jumpers. The onboard jumpers are normally set to its default setting. See the figure in section 2.2 for the location of the jumpers on the system board.

The following sections tell how to configure the system board to meet the desired performance:

2.8.1 Selecting the IR Module Type

The connector marked **CN13** lets you select the Infrared (IR) module type that you wish to install. The IR module enables the system to support the remote file transfer function.

IN TYPE

115.2 Kbit (5V)
4 Mbit (3.3V)

CN13
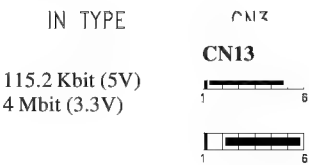
2.8.2 Selecting the ECP DMA Channel

The ECP DMA channel selections depend on the onboard I/O controller. The board may come either with SMC 665 or SMC 669 I/O controller. If you have SMC 665 controller, then you may set a DMA channel for the ECP function. The selections are channels 3 and 1. The default is DMA channel 3. To select DMA channel 1, reset jumpers **JP4** and **JP5** to 2-3.
If you have SMC 669, leave both jumpers open.

FOR SMC 665 I/O CONTROLLER

JP4   JP5

DMA channel 3
(default)

DMA channel 1
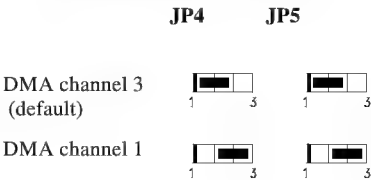
2.8.3 Disabling the Onboard Super I/O Controller

The board is preset by the manufacturer with the onboard I/O controller enabled. In case you wish to use an external I/O controller, you need to disable the onboard I/O before the external I/O card functions. To disable, you need to reset jumper **JP6** to 2-3.

**JP6**

Enabled (default)

Disabled

2.8.4 Setting the Keyboard Clock

By default, the keyboard clock is set to 8 MHz. However, you may increase it to 12 MHz by simply resetting jumper **CN15** to 2-3.

CN15

8 MHz (default)

12 MHz

2.8.5 Disabling the PS/2 Mouse Function

The PS/2 mouse function is normally enabled and occupies IRQ12. To reassign IRQ12 to another function, you need to disable the PS/2 mouse function by setting jumper **JP3** open and changing the BIOS setting. For detailed information on BIOS, see Chapter 3.

JP3

Enabled (default)

Disabled

2-15

2.8.6 Clearing the CMOS

You need to clear the CMOS if you forget your system password. To do this, shut off the system power and short **JP1** for a few seconds. Reset the jumper to normal setting by opening pins 1-2. Enter Setup to specify a new password

JP1

Normal (default)

Clear CMOS

2.9   Installing the System Board

Make sure that you have already installed the system board components like the CPU and memory, and have set the appropriate jumpers before you proceed.

Follow these steps to install a system board into a housing:

1. Open the system housing. Refer to the housing documentation for steps on how to remove the housing cover.

2. Install the board into the housing and secure it with the screws that come with the housing.

3. Attach the cables and install the necessary peripherals. See the following section for information on how to connect the peripherals.
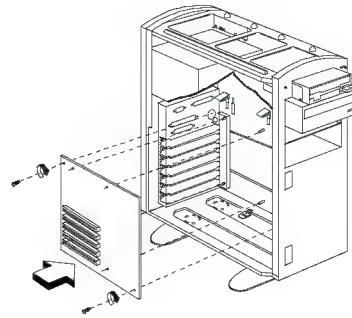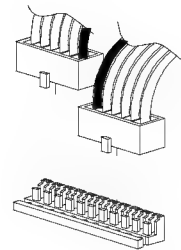
Refer to your housing documentation for more information on the system housing.

2.10 Connecting Peripherals

2.10.1 Power Cable

A standard power supply has two cables with six wires each. Plug these cables to the onboard power connector in such a way that all the black wires are in the center. The power connector is marked **CN2** on the system board.
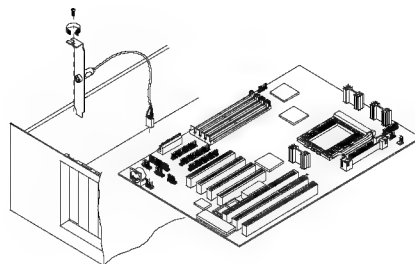
Make sure that the power supply is off before connecting or disconnecting the power cable.
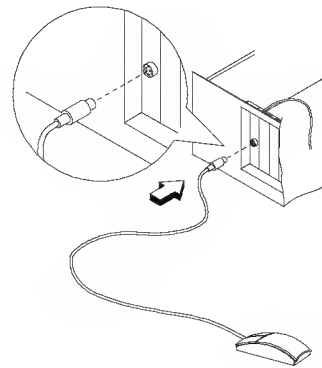
2.10.2 Mouse

PS/2 Mouse (optional)

To connect a PS/2 mouse, simply insert the PS/2 bracket connector onto **CN10** on the system board.

Plug a PS/2 mouse into the mouse
port on the bracket.

Serial Mouse

To connect a serial mouse, plug in the serial bracket connectors onto the **CN1**
and **CN6**. Insert the serial mouse connector into the appropriate COM port
on the bracket. See section 2.10.3.

2.10.3 Serial Devices (COM1/COM2)

To support serial devices, insert the
serial device connector into the serial
port on the bracket. Plug in the serial
port bracket connectors onto the
appropriate onboard connectors. The
COM1 connector is marked **CN1** and
the COM2 connector is marked **CN6** on
the system board.
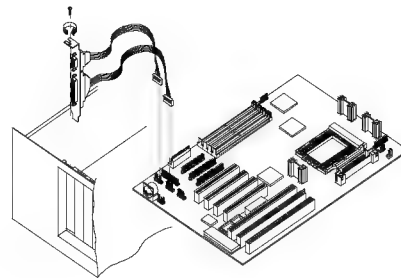
2.10.4 Floppy Disk Drives

Connect the drive cable onto the floppy disk drive connector marked **CN8** on the system board. See section 1.1 for the location of the connector. Refer to the figure on how to connect the cables.
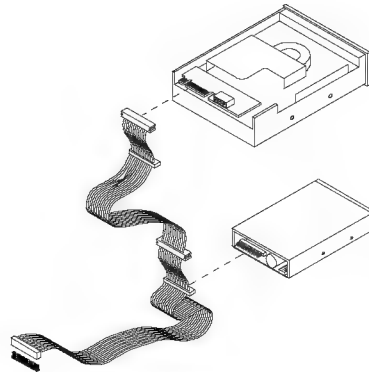
2.10.5 Printer

Plug in the printer bracket connector onto the onboard parallel connector marked **CN7** on the board.   Refer to the figure.
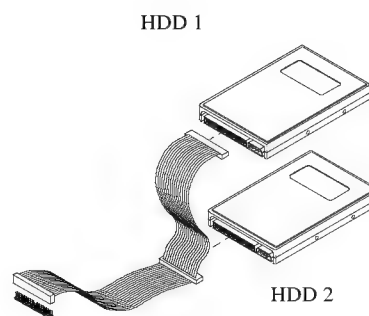The printer port on the bracket accepts the printer cable.
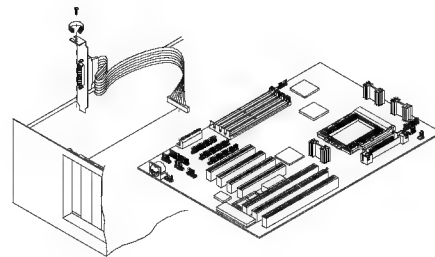
2.10.6 IDE Devices

Primary IDE Connector

The primary IDE connector marked **CN9** on the system board supports two IDE devices - one IDE hard disk and one additional IDE device. Connect your IDE HDD into the master port of the primary IDE cable. Plug in the slave port into another IDE device, if any.

HDD 1

HDD 2

Secondary IDE Connector

The secondary IDE connector is marked **CN12** on the board. This connector also supports two IDE devices. You may connect your additional IDE HDD or CD-ROM drive to this interface. To install an IDE CD-ROM drive, connect the CD-ROM drive connector to the interface master port.
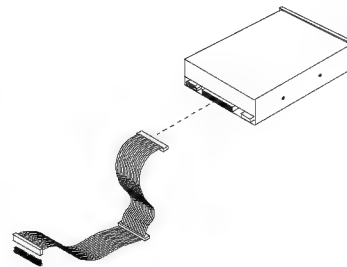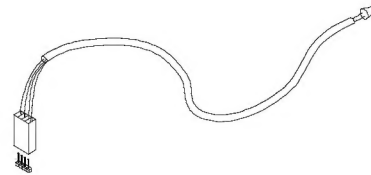
If you have more than two IDE hard disks, connect your third IDE hard disk to the master port. Then connect your CD-ROM drive to the slave port.

2.10.7 Front-panel Switches and LEDs

HDD LED

The HDD LED connector is marked
CN17 on the board. Plug the HDD
LED socket onto this four-pin
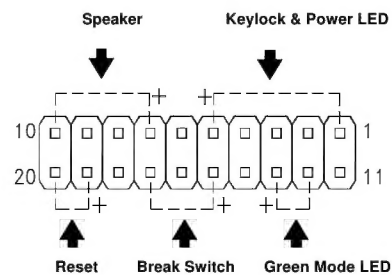connector. See the figure.

Multifunction Connector

The multifunction connector is a 20-pin
connector marked **CN16** on the board.
Attach the green mode LED, keylock,
reset switch, break switch, and speaker
connectors to its corresponding pins on
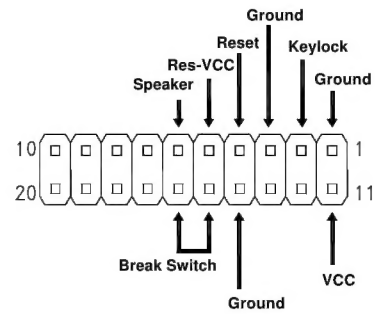the connector as shown in the figure.
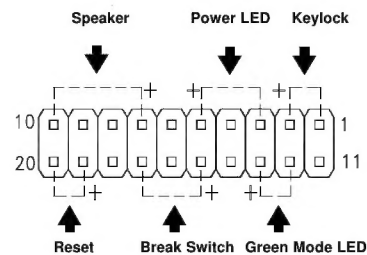
Some housings have a five-pin
connector for the keylock and power
LED.

Other housings may have a 12-pin connector. If your housing has this type of connector, plug it onto CN16 as shown in the following figure. Make sure that the red wire of the connector connects to pin 11.

2.10.8 Keyboard

The onboard keyboard connector is a five-pin AT-compatible connector marked **CN4**. Refer to the figure on how to connect an AT keyboard.
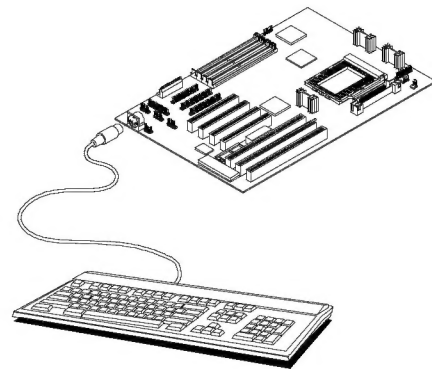

The PS/2 keyboard connector is optional.

2.10.9 Keyboard Connector Bracket

To further protect the keyboard against
EMI, the motherboard comes with a
keyboard connector bracket and two
screws. This bracket must be attached
to the keyboard port.
To attach the bracket, align the bracket
holes to the connector holes. Use the
two screws in the package to secure the
bracket to the connector.
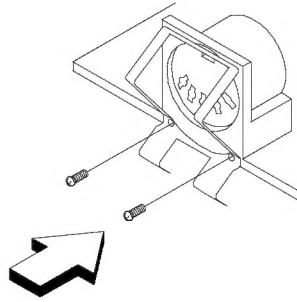
2.11 Installing Expansion Boards

Before you install any expansion board, make sure that you have secured the system board in the housing.
Follow these steps to install an expansion board:

1.   Observe the ESD precautions before removing the expansion board from its protective packaging.

2.   Locate an empty expansion slot on the system board.

3.   Remove the bracket opposite the slot that you want to use. Save the cover and screw for future use.

4.   Remove the board from its protective packaging.

5.   Gently insert the golden edge of the board onto the slot until it fits into place.

6.   Secure the bracket to the housing with a screw.

Golden edge

ISA slot

Golden edge

PCI slot